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STUDY TITLE

Enforcement Analytical Method: Goldshield 75

DATA REQUIREMENT

Product Chemistry Series 62: Enforcement Analytical Method

AUTHOR

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STUDY COMPLETED ON

April 9, 2007

PERFORMING LABORATORY

Not Applicable

Statement of No Data Confidentiality Claims

No information claimed confidential on the basis of falling within the scope of FIFRA, Section 10(d)(1)9A), (B), or (C) is included in this study.

Submitter:

NBS Technology, LLC

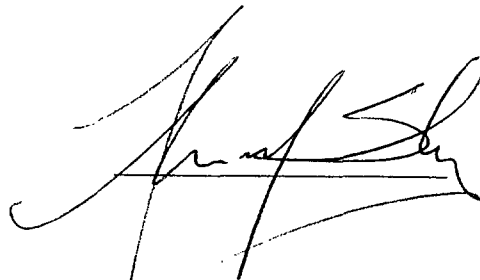
Submitter Representative:

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Title:

Vice President

Signature:

A handwritten signature in black ink, appearing to read 'Theodore Shlisky', written over a horizontal line.

Date:

April 9, 2007

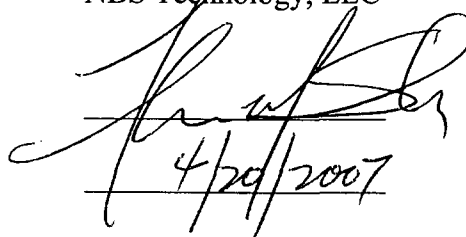
Good Laboratory Practice Statement

This study addresses enforcement analytical methods. Consequently, Good Laboratory Practice Standards, as specified in 40 CFR part 160, are not applicable and were not observed in the preparation of this study.

Study Director:

Theodore Shlisky, VP
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Signature:


4/20/2007

Date:

Sponsor and Submitter:

NBS Technology, LLC

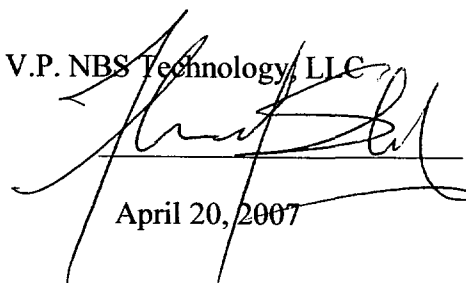
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April 20, 2007

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Enforcement Analytical Method

3-(trimethoxysilyl)propyldimethyloctadecylammonium chloride

1. Given 100.00 gm of Goldshield™⁵ solution, place material in a 500 mL round bottom flask fitted into a rotary evaporator heated at 100 degrees C. Water and methanol will be evaporated out of the solution.
2. The resultant material is then transferred to a high vacuum pump and heated to 280 degrees C. 3-chloropropyltrimethoxysilane and pentaerythritol will be evaporated out of the material, as well as the removal of any trace solvent (water, methanol). Pump for one hour.
3. Using an analytical balance, weigh out collected dried biologically active solid (3-(trimethoxysilyl)propyldimethyloctadecylammonium chloride).
4. A qualitative titration test using silver nitrate is to be performed.
5. The dried 3-(trimethoxysilyl)propyldimethyloctadecylammonium chloride is dissolved in 50 mL methanol.
6. To the solution silver nitrate is added dropwise until no more precipitation is visualized.
7. Stir/swirl the solution continuously.
8. The white precipitate is silver chloride. At this point, the biological active product, (3-(trimethoxysilyl)propyldimethyloctadecylammonium *chloride*) has been converted to 3-(trimethoxysilyl)propyldimethyloctadecylammonium *nitrate*.
9. The silver chloride (white precipitate) is collected via suction filtration through a sintered glass funnel. The 3-(trimethoxysilyl)propyldimethyloctadecylammonium *nitrate* remains in solution as a liquid.
10. The collected silver chloride is dried on a high vacuum pump for one hour to remove excess solvent (methanol).
11. The dried silver chloride is weighed using an analytical balance.
12. The amount of *chloride* present represents the amount of 3-(trimethoxysilyl)propyldimethyloctadecylammonium chloride that was present before the titration began.
13. Using the molecular weight of silver chloride, 143.4 g/mol, the amount of chloride fraction by weight is 24.8%.
14. The amount of chloride, 0.248, is divided by the sample weight collected in step #3. This gives the percent weight of biologically active 3-(trimethoxysilyl)propyldimethylammonium chloride present in the Goldshield 5 formulation.